Field identification and status of the sunbird asities *Neodrepanis* of Madagascar

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Summary: The genus *Neodrepanis* is endemic to the eastern rainforests of Madagascar, and is now considered to belong in the subfamily Philepittidae (asities) of the family Eurylaimidae (broadbills). It comprises two species, Common Sunbird Asity *N. coruscans* and Yellow-bellied Sunbird Asity *N. hypoxantha*. The two species are best distinguished by differences in plumage (especially for males in breeding plumage) and calls. The eye-wattles, or caruncles, also differ. Common Sunbird Asity is generally common in lower montane forest and is known from many sites. Yellow-bellied Sunbird Asity occurs at higher altitudes, typically in upper, or sclerophyllous, montane forest. It is locally common where its habitat survives, but suitable sites are widely scattered, so that the distribution of the species is highly fragmented. Little is known of the ecology of either species.

Introduction and history

Amongst the ornithological wonders of Madagascar is a genus of sunbird-like nectarivores, the sunbird asities *Neodrepanis*. Visitors to the island are often impressed by the beauty of the easily seen species, Common Sunbird Asity, but as the plates show, it looks almost dingy compared to the luminous brilliance of its much rarer congener, which is surely one of the world's most stunning birds.

Common Sunbird Asity was described in 1875 and considered to be a sunbird (Nectariniidae). A second species, Yellow-bellied Sunbird Asity, was described in 1933 from museum skins[16], having at the time never been knowingly observed in the field. Taxonomic review later showed that *Neodrepanis* is not a sunbird genus, but is closely related to another peculiar Malagasy endemic genus, the asities *Philepitta*[1]. The two genera formed the family Philepittidae. However, further studies have provided strong evidence that they should be considered a subfamily, Philepittinae, of the heterogeneous broadbill family, Eurylaimidae[14]. Not surprisingly given this history, various names have been suggested for the species of *Neodrepanis*. Their English generic name derives from the Malagasy name for the *Philepitta* species, while the scientific name draws attention to convergence with the Hawaiian honeycreepers (Drepanidini).

Many people know *N. coruscans* as either as Wattled Sunbird Asity, or merely Sunbird Asity, and *N. hypoxantha* as Yellow-bellied Sunbird Asity, even though both species have wattles and yellow bellies! Here, we follow Lambert, who coined the sensible name Common Sunbird Asity for the former[11].

In the absence of field observations of Yellow-bellied Sunbird Asities, understanding of its status and field characters was for long based on only 13 old museum skins, none of which was supported by precise data on locality or altitude. However, clarification is now at hand, because the species has been observed frequently in recent years as more of the island's remote rainforests have been explored. We have seen and, in some cases trapped, this species at five sites since 1988; these records form the major basis of this review. Lambert and Woodcock give much information from an earlier version of this paper[11]. Here, we emphasise and elaborate certain details, and include the first published photographs and sonograms for either species.

Identification

The genus *Neodrepanis* is characterised by a tiny body with a short tail, a fine, strongly decurved bill and, during the breeding season, strong sexual dichromatism. Males in breeding plumage are brilliant blue and black above and variably bright yellow below, with extraordinary blue and green facial caruncles. Females, males in non-breeding plumage and immatures are dull blue-green above, lack caruncles and are variably yellowish below; some female-plumaged birds (at least for Common Sunbird Asity) have a half-sized caruncle and may be immature males. In winter, males are often seen with traces of breeding plumage coloration.

Males are easy to identify in breeding plumage. Male Common Sunbird Asities (Plate 1) are duller than Yellow-bellied in almost all respects. The former have brilliant royal blue-fringed back crown, nape, mantle and scapular feathers, and narrow but fairly conspicuous yellow fringes to the secondaries and greater and median wing coverts. Their underparts are dull, deep yellow, with strong olive-brown streaking in the centre of the breast; the flanks, belly and undertail coverts

are unstreaked and somewhat brighter. The caruncle is almost square and turquoise-blue, rather greener around the eye. It extends only a short distance in front of the eye, and is not connected to the area of blue (basally) and green (distally) bare skin that overlies the basal quarter of the bill.

Male Yellow-bellied Sunbird Asities in breeding plumage (Plate 2) have the crown, nape, mantle and scapular feathers all black, widely edged brilliant royal-blue. The wing feathers lack the yellow fringes shown by Common Sunbird Asity. The underparts are an intense buttercup yellow. The caruncle is larger and more corrugated than that of the Common Sunbird Asity, extending as far in front of the eye as behind, and joining (aside from a few bristly feathers on the lores) with the extensive blue (basally) and green (distally) bare skin on the basal half of the bill; it also projects further upwards, sometimes compressing the crown feathers into a kind of Mohican-style crest. It is royal blue around the edges, with turquoise spots on the elevated parts (notably on the lower margin, where the corrugations suggest a series of brilliant blue spots under the eye) and bright lime green in the middle.

Female and immature sunbird asities are more difficult to identify. The extent and intensity of the yellow are the best diagnostic plumage characters. In Common Sunbird Asity, yellow is confined to the flanks and undertail (sometimes including the belly), and is rather dull even there. The breast and throat are dull, pale olive, often with a tinge of yellow. Female and juvenile Yellow-bellied Sunbird Asities usually have brighter yellow underparts, sometimes approaching the intensity and uniformity of males, but usually duller. The yellow is often most intense on the breast or throat. It appears that female Common Sunbird Asities are never bright yellow on the throat. AH has, however, seen Yellow-bellied Sunbird Asities showing a pattern similar to Common Sunbird Asities, being rather dull olive-green tinged yellow on the throat and breast, but yellower on the flanks. Some such birds have narrow pale fringes to the greater and median coverts. These birds are presumably immatures, but the plumage sequences are not understood.

Structural characters of the two species are not particularly useful in identification. Common Sunbird Asities have longer and more decurved bills, but this difference is difficult to be sure of in the field. In addition, both species may perch with the tip of the tongue protruding from the bill, precluding accurate assessment of bill length. Yellow-bellied Sunbird Asities appear smaller when the two species are seen side by side, but such a comparison is rarely possible.

A much more useful distinction is the call. The typical call of Common Sunbird Asity is an instantly recognisable burst of high-pitched (up to 8 kHz), vigorous notes, *see-see-see-see-see-see*. The sequence often starts at a rate of 5–8 notes per second but trails off with further, single or repeated notes of the same kind (Figure 1). Birds may call repeatedly from perches over periods of 10–20 minutes. This call is audible from 50–100 m, especially if there is no or little intervening vegetation.

Yellow-bellied Sunbird Asities have a similar call, but the individual notes are much quieter squeaks, *pss* or *hss* (so quiet as to be difficult to tape-record) and are generally not delivered as a rapid series. When notes are repeated, the interval between them is typically longer: 0.25–0.8 s (Figure 2). The sonograms illustrate the typical calls of each species. Note, how-

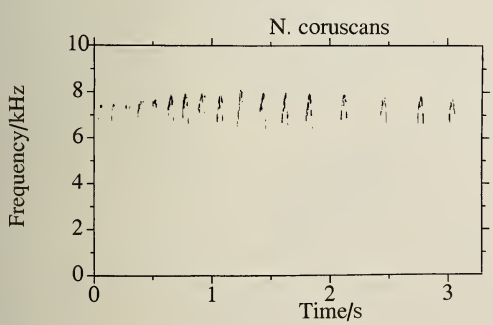

Figure 1. Sonogram of typical call of Common Sunbird Asity *Neodrepanis coruscans*, Ranomafana National Park, Madagascar, June 1993 (Recording: Roger Safford; analysed on Voice Identification RT1000 digital spectrograph).

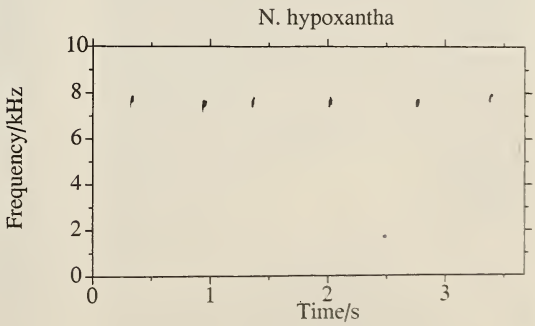

Figure 2. Sonogram of typical call of Yellow-bellied Sunbird Asity *Neodrepanis hypoxantha*, Maharira (c 1,300 m above sea level), Ranomafana National Park, Madagascar, June 1993 (Recording: Roger Safford; analysed on Voice Identification RT1000 digital spectrograph)

Plate 1. Male Yellow-bellied Sunbird Asity *Neodrepanis hypoxantha*, Andohahela Strict Reserve, south-eastern Madagascar, November 1995 (Frank Hawkins).

Plate 2. Probably sub-adult male Yellow-bellied Sunbird Asity, *Neodrepanis hypoxantha*, Andohahela Strict Reserve, south-eastern Madagascar, November 1995 (Frank Hawkins).

Plate 3. Adult male Common Sunbird Asity *Neodrepanis coruscans*, Anjanaharibe-sud Special Reserve, north-eastern Madagascar, November 1994 (Frank Hawkins).

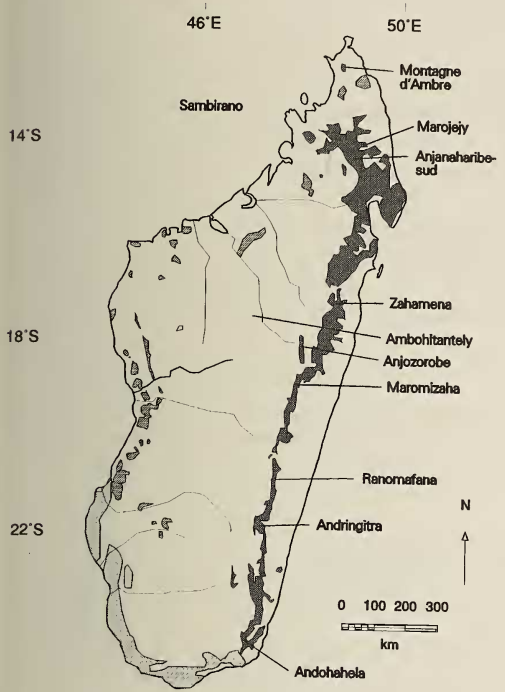

Figure 3. Map of Madagascar, showing primary forest and sites mentioned in the text.

ever, that Common Sunbird Asities sometimes give single notes, and Yellow-bellied may yet be found to utter a faster series. Copies of recordings of both species have been deposited at the National Sound Archive, Wildlife Section (London).

To sum up, male sunbird asities in breeding plumage should be easy to identify, especially by the presence or absence of yellow fringes on the wing feathers. Females, males in non-breeding plumage and immatures may be identifiable by the extent and shade of yellow on the underparts, but the variation in this character is not yet fully understood. Reports of Yellow-bellied Sunbird Asities from new sites, especially if outside the currently known altitude range (see below), need careful assessment. Recordings of calls would greatly strengthen the case for such records.

Distribution and status

Common Sunbird Asity is common in nearly all mid-altitude (500–1,300 m) eastern Malagasy rainforest areas so far investigated, but has not been found in the Sambirano region or Montagne d'Ambre in the far north[12] (Figure 3). It is typically most abundant between about 800–1,200 m[10]. It tends to be scarce or absent between 0–500 m, and appears to drop out abruptly at around 1,200–1,400 m. So far Yellow-bellied Sunbird Asity has only been found commonly above 1,200 m, and is typically most abundant between 1,400–2,000 m[10]. It has recently been recorded from (north to south) Marojejy Strict Reserve (1,500 m)[5,15], Anjanaharibe-sud Special Reserve (1,400–2,000 m)[9], Zahamena Strict Reserve (1,300–1,450 m) (FH pers obs), Ranomafana National Park (1,100–1,300 m) (RS pers obs, following reports from S. Malcomber, C. Hemingway and Loret Rasabo[13]), Andringitra Strict Reserve (1,350–2,200 m)[7] and Andohahela Strict Reserve (1,300–1,950 m)[6]. In all cases except Marojejy the species was common up to the limit of shrubby vegetation (more than 2 m high). There are occasional records of Yellow-bellied Sunbird Asity at Vohiparara at 1,100 m in Ranomafana National Park (Loret Rasabo, P. Morris and B.E. Wright, pers comm), where the species is common in higher areas nearby. Reports from Maromizaha near Perinet-Analamazaotra Special Reserve are perfectly plausible but need to be published in view of past confusion at that site[11].

These altitudes are related to forest types. In very general terms, Yellow-bellied Sunbird Asity inhabits upper (or sclerophyllous) montane forest, which is low-canopied and mossy, whereas Common Sunbird-Asity is found in lower (or moist) montane forest (sometimes called mid-altitude forest). In regions where both species occur together, there is a very sudden change in the species of *Neodrepanis* present, usually where these forest types intergrade. At the upper end of its altitude range, Common Sunbird Asity occupies the valleys, whereas Yellow-bellied Sunbird Asity is present on the ridges, where the vegetation resembles that of higher altitudes. In other cases, for instance between 1,400–1,700 m in Andohahela, in rather dry forest in the rain shadow of the main escarpment, neither species of *Neodrepanis* was found[8]. To sum up, recent observations confirm the hitherto unsubstantiated suggestion that Yellow-bellied Sunbird Asity is the highland counterpart of Common Sunbird Asity[4].

Both species of *Neodrepanis* appear to be rare or absent from the few highland forest relict patches on Madagascar's central plateau that have been surveyed. A single record of Common Sunbird Asity at about 1,300 m in Ambohitantely Special Reserve[2], one such isolated patch (by about 200 km), suggests either that this species can survive in small forest blocks for long periods at very low densities, or that it is capable of moving fairly long distances.

General habits

Both species feed on nectar and insects. A wide variety of plant genera have been recorded as nectar sources, and both species take a variety of arthropod prey. The latter is usually gleaned, although Yellow-bellied Sunbird Asities sally for flying insects from the tops of low shrubs on mountain-tops, a marvellous sight in the low yellow light of evening.

Sunbird asities are very inquisitive. Males often approach to within 1 m to investigate an observer. This experience may only last one or two seconds, so photographers need to be fast on the shutter. In mid-altitude forest Common Sunbird Asities may be frustratingly difficult to see, since they are often high in the canopy and the call is difficult to place. A good strategy for seeing either species is to wait near clumps of flowers (particularly *Bakerella*, which looks like a large orange honeysuckle flower) at the forest edge. A close range visit by a male Yellow-bellied Sunbird Asity is an unforgettable experience, particularly if the bird displays intently at intruders, calling vigorously and leaning far forward on the branch and lifting its head to display the caruncle and brilliant yellow throat. They seem especially attracted to observers up trees, although in low, mossy forest they may approach terrestrial observers with equal willingness.

Sunbird asities share with the *Philepitta* asities and the other broadbills the habit of placing near-spherical nests in understorey shrubs or low trees[8,12]. The sexual dichromatism and poorly understood displays of sunbird asities indicate some interesting social structure. In flight, the wings make a remarkably loud whirring (almost trilling) noise. This noise seems loudest in breeding-plumaged males and, to RS, also seemed louder in Yellow-bellied than in Common Sunbird Asity. It may be made by the needle-like first primary, which is only present in breeding-plumaged males and is longer in the Yellow-bellied species. Perhaps it is used in display. A fascinating study awaits the behavioural ecologist willing to invest some time in these species.

Conservation needs

On the basis of its apparent scarcity at Marojejy[5,15] and the fact that only 13 museum specimens had been collected before 1993, Yellow-bellied Sunbird Asity was treated as endangered in *Birds to Watch 2*[3]. However, it is now clear that it is common within its limited altitudinal range. Its habitat area is certainly being reduced, but at least some populations are present in areas under no immediate threat from clearance. Common Sunbird Asity is present in almost all eastern rainforest reserves, and is most abundant in the altitude range where most rainforest remains, between 800–1,300 m. It is not, therefore, currently threatened with extinction.

However, deforestation is occurring along much of the eastern rainforest belt of Madagascar. Since both species occur in several protected areas, management of these, together with attempts to reduce the rate of deforestation throughout eastern Madagascar, must be the basis for their conservation, as is the case for many other species.

The distribution, altitudinal limits and conservation status of the sunbird asities are imperfectly known and, as for many other Malagasy species, knowledge of their ecology is largely anecdotal. Observers willing to go off the beaten track can make very significant discoveries. In particular, the forests on the upper edge of the eastern escarpment (near Anjozorobe, for instance) are little known and could repay further investigation by intrepid observers.

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